

WHAT IS CLAIMED IS:

1. A light modulator, comprising:

a mirror having first and second surfaces suspended over a cavity arranged under the first surface;

5 supports attached to the second surface of the mirror;

support posts suspending the mirror over the cavity by the supports, the support posts and supports being formed from a same layer of material; and

an electrode and an optical stack positioned opposite the first surface across the cavity from the mirror such that activation of the electrode causes the mirror to  
10 move towards the electrode, changing dimension and interference properties of the cavity.

2. The light modulator of claim 1, the modulator comprising a bus structure attached to the support posts adjacent to the second surface of the mirror.

3. The light modulator of claim 1, the modulator comprising a landing pad arranged  
15 upon the electrode and optical stack.

4. The light modulator of claim 3, the landing pad being arranged underneath the mirror.

5. The light modulator of claim 3, the landing pad being arranged so as to contact the supports.

6. A light modulator, comprising:

20 a mirror having first and second surfaces suspended over a cavity arranged under the first surface;

supports attached to the second surface of the mirror;

support posts suspending the mirror over the cavity by the supports, the support posts having support post plugs; and

25 an electrode and an optical stack positioned opposite the first surface across the cavity from the mirror such that activation of the electrode causes the mirror to

move towards the electrode, changing dimension and interference properties of the cavity.

7. The light modulator of claim 6, the modulator comprising a bus structure attached to the support posts adjacent to the second surface of the mirror.
- 5 8. The light modulator of claim 6, the modulator comprising a landing pad arranged upon the electrode and optical stack.
9. The light modulator of claim 8, the landing pad arranged underneath the mirror.
10. The light modulator of claim 8, the landing pad arranged so as to contact the supports.
11. A light modulator, comprising:
  - 10 a mirror having first and second surfaces suspended over a cavity arranged under the first surface;  
supports attached to the second surface of the mirror;  
support posts suspending the mirror over the cavity by the supports;  
a bus structure attached to the support posts adjacent to the second surface of the mirror; and
  - 15 an electrode and an optical stack positioned opposite the first surface across the cavity from the mirror such that activation of the electrode causes the mirror to move towards the electrode, changing dimension and interference properties of the cavity.
- 20 12. The modulator of claim 11, the support posts being formed from a same layer as the supports.
13. The modulator of claim 11, the support posts being formed by support post plugs.
14. The modulator of claim 11, the modulator comprising a landing pad arranged upon the electrode and optical stack.
- 25 15. An array of light modulators, comprising:  
at least three modulators arranged so as to form one resulting picture element;

each modulator comprising a mirror suspended over a cavity by supports, the supports formed such that each modulator corresponding to each color assumes a quiescent state corresponding to a cavity with a different dimension.

16. A method of manufacturing a light modulator, the method comprising:

- 5       forming an electrode and optical stack on the back of a transparent substrate;
- depositing a first sacrificial layer upon the electrode and optical stack;
- forming mirrors on the first sacrificial layer;
- depositing a second sacrificial layer upon the mirrors;
- forming post holes adjacent to the mirrors;
- 10       using a planarization layer to form support post plugs;
- depositing a flexible layer on the support post plugs and forming attachments between the flexible layer and the mirror; and
- removing the first and second sacrificial layers.

17. The method of claim 16, the method comprising forming bus structures on the flexible  
15       layer arranged over the support post plugs.

18. The method of claim 16, forming attachments further comprising forming supports of predetermined mechanical properties such that the mirror assumes a quiescent state at a predetermined vertical position from the electrode and optical stack.

19. The method of claim 16, forming attachments further comprising forming supports  
20       with predetermined physical restraints that cause the mirror to move to a predetermined position relative to the electrode and optical stack upon application of a constant voltage.

20. The method of claim 16, the method comprising forming a landing pad array upon the electrode and optical stack.

25   21. The method of claim 20, forming a landing pad further comprising forming landing pads of varying thicknesses to control an amount of movement of the mirror.

22. The method of claim 16, depositing a first sacrificial layer further comprising depositing three thicknesses of the first sacrificial layer, the thickness deposited for a modulator being dependent upon a color designation of that modulator.
23. A method of manufacturing a light modulator, the method comprising:
- 5       forming an electrode and optical stack on the back of a transparent substrate;  
      depositing a first sacrificial layer upon the electrode and optical stack;  
      forming mirrors on the first sacrificial layer;  
      depositing a second sacrificial layer upon the mirrors;  
      forming post holes adjacent to the mirrors;
- 10       depositing a flexible layer on the second sacrificial layer such that attachments between the flexible layer and the mirror are formed and the flexible layer fills the post holes forming support posts; and  
      removing the first and second sacrificial layers.
24. The method of claim 23, the method comprising forming bus structures on the support
- 15       posts.
25. The method of claim 23, depositing the flexible layer further comprising depositing the flexible layer and patterning and etching it to provide supports of predetermined mechanical properties such that the mirror assumes a quiescent state at a predetermined vertical position from the electrode and optical stack.
- 20       26. The method of claim 23, forming attachments further comprising depositing the flexible layer and patterning and etching it to form supports of predetermined physical restraints that cause the mirror to move to a predetermined position relative to the electrode and optical stack upon application of a constant voltage.
27. The method of claim 23, the method comprising forming a landing pad array upon the
- 25       electrode and optical stack.

28. The method of claim 27, forming a landing pad array further comprising forming  
landing pads of varying thicknesses to control an amount of movement of the mirror.
29. The method of claim 23, depositing a first sacrificial layer further comprising  
depositing three thicknesses of the first sacrificial layer, the thickness deposited for a  
5 modulator being dependent upon a color designation of that modulator.
30. A method of manufacturing a light modulator, the method comprising:  
forming a mirror over a first sacrificial layer attached to a flexible layer over a  
second sacrificial layer and having support posts;  
depositing a third sacrificial layer over the flexible layer;  
10 forming bus structures in a conductive layer on top of the third sacrificial layer  
arranged over the support posts; and  
removing the sacrificial layers.
31. The method of claim 30, forming a mirror comprising forming a mirror having  
support posts comprised of a portion of the flexible layer.
- 15 32. The method of claim 30, forming a mirror comprising forming a mirror having  
support post plugs.
33. The method of claim 30, the method comprising forming a landing pad under the first  
sacrificial layer.

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